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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re the Application of:

WASHIZU, Masao et al.

Serial No.: 09/670,399

Filed: September 27, 2000



Group Art Unit: 1703

Examiner: Jennine M. Brown

For: METHOD FOR SEPARATING SUBSTANCES USING
DIELECTROPHORETIC FORCES

REQUEST FOR RECONSIDERATION

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Date: June 16, 2003

Sir:

Reconsideration of the rejections contained in the Office Action dated February 14, 2003, in view of the following detailed comments are respectfully requested.

In the Office Action, claims 1-10 were rejected under 35 USC § 102(e) as being anticipated by the Regnier et al patent. In making this rejection, it was asserted that the Regnier et al patent teaches a method which forms a complex of a molecule to be measured, separates the specific complex of the molecule by use of a dielectrophoretic field, and then detects the separated molecule complex to give a quantitative measurement. Reconsideration of this rejection in view of the following comments is respectfully requested.

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It is submitted that the Regnier et al patent does not teach or suggest the invention as defined by the amended claims. More particularly, it was urged in the last response that the present claims distinguished over the Regnier et al patent since the patent did not teach a method which utilizes dielectrophoresis, that is, a procedure which relies upon the motion imparted on uncharged particles as a result of the application of a non-uniform electric field. Specifically, it was argued that the method as disclosed by the cited Regnier et al patent does not utilize such a non-uniform electric field.

In the subject Action, a response was made to the above argument by asserting that since the electrophoretic apparatus of the Regnier et al patent inherently could be used for dielectrophoresis, the subject claims recitation of the use of a non-uniform electric field does not distinguish the claimed method over electrophoresis. It was then concluded that even though the claims do recite an inhomogeneous field, the method is essentially the same.

It is submitted that such the conclusion is unsupported and therefore erroneous since the burden in terms of anticipation has not been met and such a conclusion is based both prohibited hindsight reconstruction and speculation. First, the rejection is based on anticipation yet the examiner acknowledged that the claimed method is not specifically taught by the patent. It is well settled that each step of the method must be taught by a cited patent for anticipation to occur.

Second, the alleged fact that the apparatus of the cited patent inherently is capable of conducting dielectrophoresis is totally irrelevant. The patent teaches that apparatus is used for electrophoresis only, with no suggestion that dielectrophoresis should or could be conducted.

In concluding that the Regnier patent inherently discloses dielectrophoresis as in the presently claimed invention, it apparently was alleged that if a specific electric current is selected and applied to the apparatus of Regnier patent, a non-uniform electric field may be formed. However, such an allegation is inaccurate. The non-uniform electric field is not formed by selecting an electric current, rather the non-uniform electric field is formed by the shape of an electrode. The electrode which forms a non-uniform electric field always produces the non-uniform electric field regardless of selection of an electric current. In this regard, attention is directed to page twenty-seven of the present specification and col.8, lines 31-32 of the cited Becker et al patent.

Thus, even if it is assumed that the apparatus of the Regnier et al patent inherently could be used for dielectrophoresis, use in this fashion would not be suggested to one of ordinary skill unless the inherency was known. No reason has been advanced that this fact was known and thus the conclusion must be based on speculation.

Third, only by being aware of the applicant's invention could it then be asserted that one would recognize that the apparatus of the patent inherently could be utilized in the

fashion suggested. Such is classic hindsight reconstruction from applicants' own disclosure. It could be emphasized that any hindsight reconstruction in formulating an obviousness type rejection is not permitted under standard U.S. patent practice.

For the reasons stated above, withdrawal of the rejection under 35 U.S.C. § 102(a) and allowance of claims 1-10 over the cited Regnier et al patent are respectfully requested.

Claims 1-10 were rejected under 35 USC § 102(e) as being anticipated by the newly cited Becker et al patent. Briefly, in making the rejection, it was asserted that the Becker et al patent teaches a method which moves a sample or packet using dielectrophoretic forces and, in particular, teaches forming a complex to separate a specific molecule from a mixture by applying dielectrophoretic field and then detecting the separated molecule complex. Reconsideration of this rejection in view of the following comments is respectfully requested.

From a careful review of the cited Becker et al patent, it appears to disclose a microfluidic processing method where dielectrophoretic forces may be used to generate a manipulation force on one or more packets such that the one or more packets interact. According to the disclosure, "interacting" can mean at least one of moving, reacting, dividing and the like. However, contrary to the assertion made in the Action, there is no disclosure in this patent of forming a complex substance as is defined by independent claims 1, 2, 4-7. In particular, none of the citations to specific portions of the Becker et al

patent actually disclose that which was asserted in terms of complex substances.

Further, the method of the present invention is distinguished from that disclosed in the Becker et al in that the presently invention separates a specific molecule in a sample, and on the other hand, the patent to Becker et al migrates a packet, that is, a sample. That is, the Becker et al patent only discloses to migrate a sample whereas the presently claimed invention separates a specific molecule in a sample.

For the reasons stated above, withdrawal of the rejection under 35 U.S.C. § 102(a) and allowance of claims 1-10 over the cited Becker et al patent are respectfully requested.

Claims 14-23 were rejected under 35 USC § 103(a) as being unpatentable over the same Regnier et al patent in view of the Becker et al patent. In making this rejection, it was asserted that it would be obvious to use the apparatus of the Regnier et al for a dielectrophoretic separation in view of the teaching of the Becker et al patent teaching the use of either electrophoretic and dielectrophoretic processes.

In our view, the rejection could be argued on the basis that one of ordinary skill in the art would not employ the teachings of the Becker et al patent in the method as disclosed in the Regnier et al patent. In particular, it could be emphasized in support of the patentability of the subject invention over the teachings of the cited patent is that these patents provides no suggestion to motivate one of ordinary skill in the art to modify their

teachings in the manner proposed by the examiner. It is well established principle of U.S. patent practice that the prior art must contain some suggestion for modification since without such, any modification is pure speculation on the part of the examiner and is based on a prohibited hindsight reconstruction from applicants' own disclosure.

Specifically, the Regnier patent discloses separating a specific molecule dissolved in a body fluid, such as analyte or TSH, by means of electrophoresis. On the other hand, the Becker et al patent discloses the use of dielectrophoresis on a packet where the packet is compartmentalized, which means to be isolated from the outside. Thus, the two patents are entirely different from each other and it would not be possible for one of ordinary skill to combine their respective teachings.

For the reasons stated above, withdrawal of the rejection under 35 U.S.C. § 103(a) and allowance of claims 14-23 over the cited Regnier et al and Becker et al patents are respectfully requested.

In view of the foregoing, it is submitted that the subject application is now in condition for allowance and early notice to that effect is earnestly solicited.

In the event this paper is not timely filed, the undersigned hereby petitions for an appropriate extension of time. The fee for this extension may be charged to Deposit Account No. 01-2340, along with any other additional fees which may be required with

Serial Number: 09/670,399

respect to this paper.

Respectfully submitted,

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